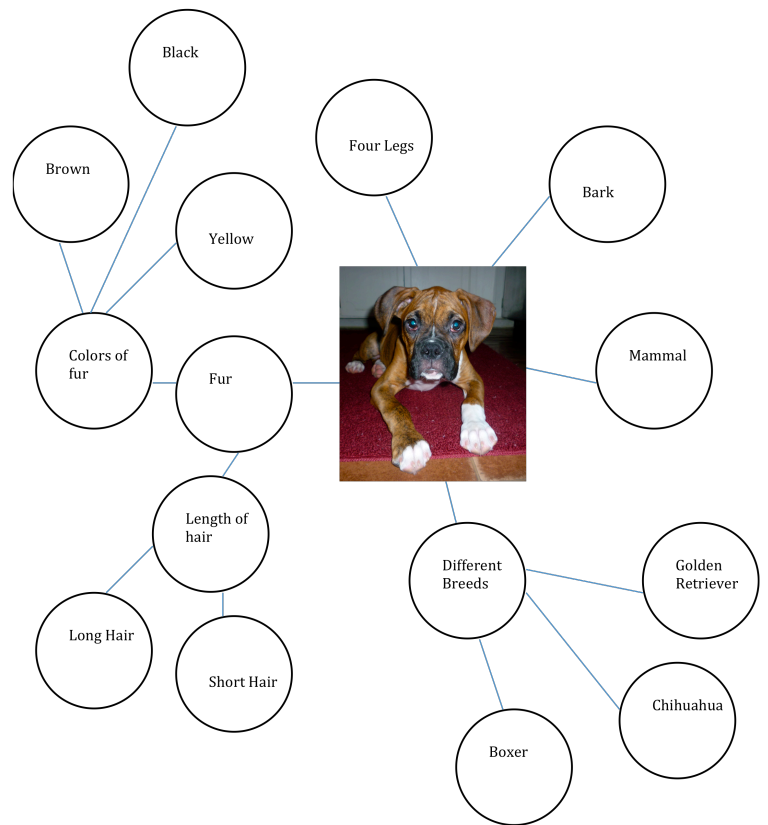


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SCHEMA THEORY



MONTESSORI METHOD



COMPARISON CRITERIA	SCHEMA THEORY	MONTESSORI METHOD
Ease of Implementation	Easy to implement, as all students have some form of schema. Activities to reveal students' schema, such as brainstorming, mind mapping, discussion and predicting can all be implemented with little teacher preparation. However, students who speak English as a second language may have more difficulty with this model.	More challenging to implement as the teacher must be a facilitator and allow children of different ages to learn on their own. Also, classroom management with this method may be difficult.
Relative "student-centeredness"	Based completely on students' background knowledge. Students at the elementary level enjoy discussing their experiences and knowledge of topics and subjects, and therefore this allows students to easily and fully participate.	Very student centered, and based on the child's desire to learn and progress at his or her own rate. Also takes into account students' interests.
Assessment	Teacher and student can assess relatively easily. Students can determine what they know about a topic by mapping or discussions. Teachers can use a pre and post test to have students write, describe orally, or draw about what they know after a lesson or unit is taught and how they have built their schema.	Difficult to assess, because the student decides when to move on to the next level, and is responsible for his/her own learning.

The schema theory was developed by R.C. Anderson who was a well-known educational psychologist. Although schema was a term used by Piaget in 1926, Anderson expanded the meaning. The theory “views organized knowledge as an elaborate network or storage system of abstract mental structures that represent an individual’s understanding of concepts related to experiences and knowledge” (Little & Box, 2011). The knowledge is organized into units called schemata. These units of knowledge are based on people’s experiences, whether they be lived experiences or evolve as people have new experiences, and impact how people interpret and understand information. Some characteristics of schemata according to Anderson are:

- Schemata are always organized meaningfully, can be added to, and, as an individual gains experience, develop to include more variables and more specificity.
- Each schema is embedded in other schemata and itself contains subschema.
- Schemata change moment by moment as information is received.
- They may also be reorganized when incoming data reveals a need to restructure the concept.
- The mental representations used during perception and comprehension, and which evolve as a result of these processes, combine to form a whole which is greater than the sum of its parts.

Research suggests that “abstract concepts are best understood after a prior foundation of concrete, relevant information related to the major concepts to be studied has been established” (Little & Box, 2011).

Prior knowledge is critical for helping students understand new information. Teachers can use the following activities to either build the prerequisite knowledge, or to activate prior knowledge before introducing new information. These activities will help students make connections between this prior knowledge and the new information being taught.

Activities to activate schema include:

- Brainstorming
- Discussion
- Semantic Mapping (and other advanced graphic organizers)
- Visual Aids
- KWL Charts

Sources:

Little, D. C., & Box, J.A. (2011). The use of a specific schema theory strategy- semantic mapping- to facilitate vocabulary development and comprehension for at risk readers. *Reading Improvement* 48(1), 24-31

<http://www.sil.org/lingualinks/literacy/implementationliteracyprogram/schematheoryoflearning.htm>

The Montessori method of education was developed by Dr. Maria Montessori in Italy in the early 1900s. The core philosophy behind the Montessori method is that every child is unique. Each child's individuality must be respected throughout the entire education process. The classroom is an environment for children to become "normalized," meaning they will develop into whole, peaceful adults with the love of learning.

The environment of the classroom is essential to the Montessori method. Maria Montessori argued that the child's learning setting should be carefully designed to meet the needs and interest of all children. In order to meet those needs, Maria Montessori concentrated on certain concepts in her theory, which would lead to development in each child. Some of the concepts are auto-education with didactic material, individualized education, the Montessori environment, independence and the prepared environment, non-graded grouping, education of the senses, and control of error (Montessori, 1964; Orem, 1971).

The first concept of Montessori's theory is Auto-Education with Didactic Material. Through this concept, according to Montessori (1964), the child builds itself through experiences within the environment. She developed a set of didactic materials to lead to sensory education, muscular coordination, and language development. The didactic materials were created to have a built-in "control of error", which provides the child a concrete proof of whether its work is right or wrong, freeing the teacher from solely being the person of reinforcement. Providing children with a learning environment including direct contact with materials for learning, children are not held to the pace or interests of the teacher or other children. The materials give children a chance to figure out their inner drive to learn and learn at their own speed. The didactic materials were designed to allow children to work independently after the learning environment is prepared.

The second concept of the Montessori theory is Individualized Education. Due to each child's potential for auto-education, Montessori believed that each child should be the main concern than the actual method of teaching. Within Montessori's method of teaching the natural drive of the child to learn is freed. Every child is unique in their learning capacity, rate, and interests. The child-centered education of the Montessori method encourages children to express their individuality in learning. The learning system aims to provide each child with an opportunity to develop at its own pace through cooperation and respect for themselves and others (Orem, 1971).

The Montessori environment is another concept of this theory. Montessori believed within the classroom there should always be movement and activity at many levels (Orem, 1971). The environment within in the classroom should be moveable, the didactic materials are designed for manipulation by all children, who are free to move about the environment. The teachers are there to aid the children in becoming well coordinated through specific exercises and motor training within the classroom and outdoors (Montessori, 1964). An additional responsibility of the teacher is to reduce the amount of obstacles for the children to successfully and orderly move about the classroom. Each child is given freedom to

collaborate with the classroom environment to increase and master their motor behavior. The Montessori environment should be set up to prepare a child's natural desire to learn (Montessori, 1964). Allowing the children to experience the excitement of learning by their own choice rather than by forcing each child into a specific activity, as well as, helping children develop their own natural tools for learning, emphasizing on freedom, learning how to learn, and develop self-confidence (Orem, 1971).

Independence and the Prepared Environment is another concept within the Montessori theory. The prepared environment makes freedom in the school practical, with emphasis on moving individuals working at their own task during uninterrupted blocks of time (Montessori, 1964). Each child is free to choose the activity, work at their own pace, and collaborate with other children as long as the collaboration does not interfere with their individual work. Montessori noted that the child learns to work by him or herself in the prepared classroom environment, enjoying the presence of other children but not necessarily working directly with them (Montessori, 1964).

Non-graded Grouping is an additional concept of the Montessori Theory. Within this concept, classes should be grouped by age brackets rather than by grade (Orem, 1971). Within each non-graded group, children advance at their own pace rather than that of their classmates. It depends on their own growth, learning styles, etc. Non-graded grouping allows a child to work with older children in one subject, younger children in another, and still have social interaction with children his own age. Another benefit of non-graded grouping is the fact that learning is enhanced for the older children when they help someone younger and the younger children are stimulated by exposure to the work of the older children (Orem, 1971).

Montessori noted that the child seems to have a capacity for taking in the whole of his/her environment just by existing within it. This capacity for consuming from the environment like a sponge soaking up moisture from its surroundings. Montessori development stages or planes of development within her educational theory. Through the stages or plans, the non-graded groupings are valued. The first plane Montessori discovered was A Period of Transformation, which is age 0-6 years, in which there is an Individual Creation of the Person. During this period, She observed that young children behaved in self-centered and egocentric ways, which later lead her to realize that this is the natural way of young children which provided the core and drive for their self-development (Lillard & Jessen, 2003). She also noted that children under the age of six go through particular and well defined periods of interest in certain areas of their development, and there is a period of intense absorption with language, order, and walking (Lillard & Jessen, 2003). These intervals are called Sensitive Periods. During each of these periods, the child appears to be working on one specific area of development while ignoring all of the others (Lillard, 1996).

While developing and progressing through the stages or planes, provides children with the knowledge and learning capacity to successfully arrive at adulthood, still as the unique individual. Honoring the whole child, in all unique forms, the Montessori method of teaching provides children with exploration, development, and individuality throughout their educational journey.

Lillard, P. (1996). *Montessori today: A comprehensive approach to education from birth to adulthood*. New York. Schocken Books

Lillard, P. & Jessen, L. (2003). *Montessori from the start: The child, from Birth to age three*. New York. Schocken Books

Montessori, M. (1964). *The Montessori method*. New York. Schocken Books.

Orem, R. C. (1971). *Montessori today*. New. York. Capricorn Books.

The Montessori model and the Schema Theory have some commonalities. To begin with, both are very student centered and individualized. The Schema theory is based on student's own background knowledge whereas the Montessori theory requires students to develop at their own pace and evaluate their own knowledge. In addition, the environment plays a role in the learning that occurs with both models. In the Montessori model, students are educated in an open environment, which dictates how and what they learn. In the Schema theory, using the environment can help to activate schema, whether it be through classroom posters, visuals, or other tools. Lastly, both models focus on building upon previous knowledge or learning. The Montessori model has planes of development, in which students build upon what they have learned previously. Similarly, the Schema theory encourages teachers to build on students' prior knowledge as they introduce new information.